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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,223	01/28/2004	Kevin J. Laboe	706562US2-	2904

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EXAMINER

CHERRY, STEPHEN J

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,223

Applicant(s)

LABOE ET AL.

Examiner

Stephen J. Cherry

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,330,802 to Cummings et al.

Claim 1 recites, as disclosed by Cummings:

1. An apparatus for determining a level of a refrigerant fluid in the cooling system of a vehicle comprising: a first temperature measuring device

adapted to be coupled to a first region of a conduit containing the refrigerant fluid ('802, 22); a second temperature measuring device adapted to be coupled to a second region of the conduit ('802, 24); and a data processing system coupled to outputs of the first and second measuring devices and operative to determine a temperature difference between the first and second conduit regions from the outputs of the first and second temperature measuring devices and to correlate the temperature difference to the level of refrigerant fluid (802, 26, and col. 2, line 3).

Claim 2 recites, as disclosed by Cummings:

2. The apparatus of claim 1, wherein the first temperature measuring device is adapted to be coupled to an input conduit of an evaporator of the cooling system and wherein the second temperature measuring device is adapted to be coupled to an output conduit of the evaporator of the cooling system ('802, 22 and 24, fig. 1).

Claim 3 recites, as disclosed by Cummings:

3. The apparatus of claim 1, wherein the data processing system uses a table of pre-selected data that includes a plurality of temperature differences that correspond to a plurality of levels of refrigerant fluid ('802, col. 4, line 10).

Claim 4 recites, as disclosed by Cummings:

4. The apparatus of claim 1, wherein the data processing system further comprises a monitor for displaying the level of refrigerant ('802, 28).

Claim 6 recites, as disclosed by Cummings:

6. The apparatus of claim 1, further comprising an indicating device for informing the user when the level of refrigerant fluid in the cooling system is below a pre-selected charge level ('802, 28, and col. 3, line 1).

Claim 7 recites, as disclosed by Cummings:

7. A method for determining a level of refrigerant fluid in a cooling system of a vehicle comprising: measuring a first temperature at a first region of a conduit containing the refrigerant ('802, 22); measuring a second temperature at a second region of the conduit ('802, 24); determining a temperature difference between the first and second region; and determining the level of refrigerant fluid by correlating the measured temperature difference with pre-selected data (802, 26, and col. 2, line 3).

Claim 8 recites, as disclosed by Cummings:

8. The method of claim 7, wherein the first region of the conduit is located at an inlet side of an evaporator of the cooling system and the second region of the conduit is located at an outlet side of the evaporator ('802, 22 and 24, fig. 1).

Claim 9 recites, as disclosed by Cummings:

9. The method of claim 7, wherein the pre-selected data includes a plurality of temperature differences that correspond to a plurality of levels of refrigerant fluid ('802, col. 4, line 10).

Claim 10 recites, as disclosed by Cummings:

10. The method of claim 7, wherein a data processing system determines the temperature difference and the level of refrigerant fluid ('802, 26 and col. 4, line 10).

Claim 11 recites, as disclosed by Cummings:

11. The method of claim 10, wherein the data processing system includes a monitor for displaying the level of refrigerant (802, 28).

Claim 12 recites, as disclosed by Cummings:

12. The method of claim 7, further comprising informing the user when the level of refrigerant fluid in the cooling system is below a pre-selected charge level ('802, 28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent 6,330,802 to Cummings in view of U.S. Patent 6,786,056 to Bash et al.

Claim 5 recites, as disclosed by Cummings:

a first temperature measuring device adapted to be coupled to a first region of a conduit containing the refrigerant fluid ('802, 22); a second temperature measuring device adapted to be coupled to a second region of the conduit ('802, 24); and a data processing system coupled to outputs of the first and second measuring devices and operative to determine a temperature difference between the first and second conduit regions from the outputs of the first and second temperature measuring devices and to correlate the temperature difference to the level of refrigerant fluid (802, 26, and col. 2, line 3).

Cummings does not disclose the use of thermocouples.

The claim further recites measuring the temperatures with thermocouples, as disclosed by Bash ('056, col. 18, line 48).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the thermocouple of Bash with the invention because Bash discloses that thermocouples and thermistors are interchangeable for the purpose of measuring evaporator temperature ('056, col. 18, line 48).

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure; U.S. Patents 3,791,165 to Honnold, Jr. et al and 4,395,886 to Mayer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (571) 272-2272. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJC


John Barlow
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